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(54) Abstract Title
Rotatable adapter for power track

(57) An adapter for connecting a light fitting to a power track has two inlet terminals connected to two outlet terminals 12, 13. One of the inlet terminals 15 is a generally cylindrical sleeve, such as a balloon spring, and the other (18, Fig 3) is a pin resiliently mounted coaxially within the sleeve. The pin is slidingly connected to its outlet, and the cylinder can be mounted in the track in a range of orientations, so the adapter can be rotated relative to the track without the light fitting having to move relative to the outlet terminals.

Fig2

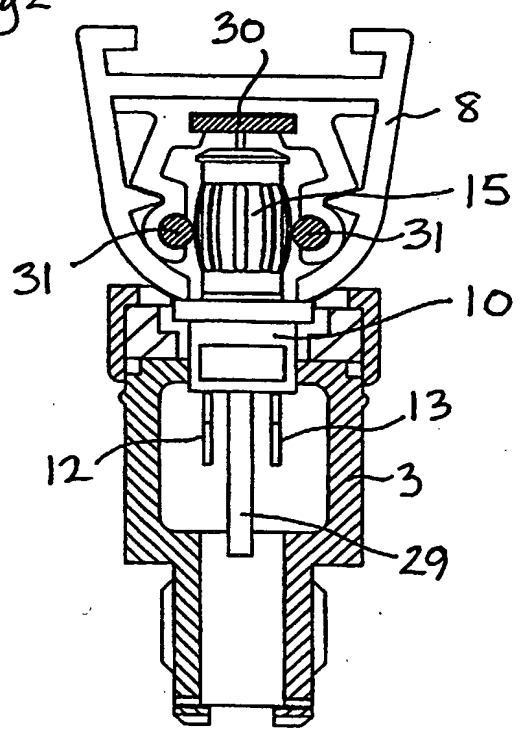

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Fig 1

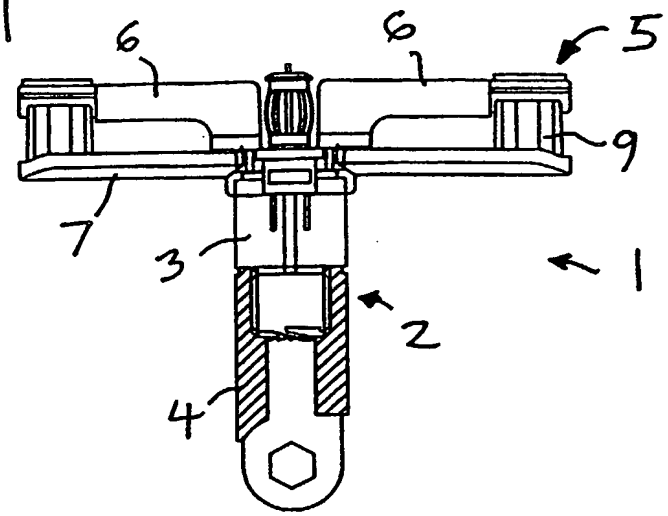


Fig 2

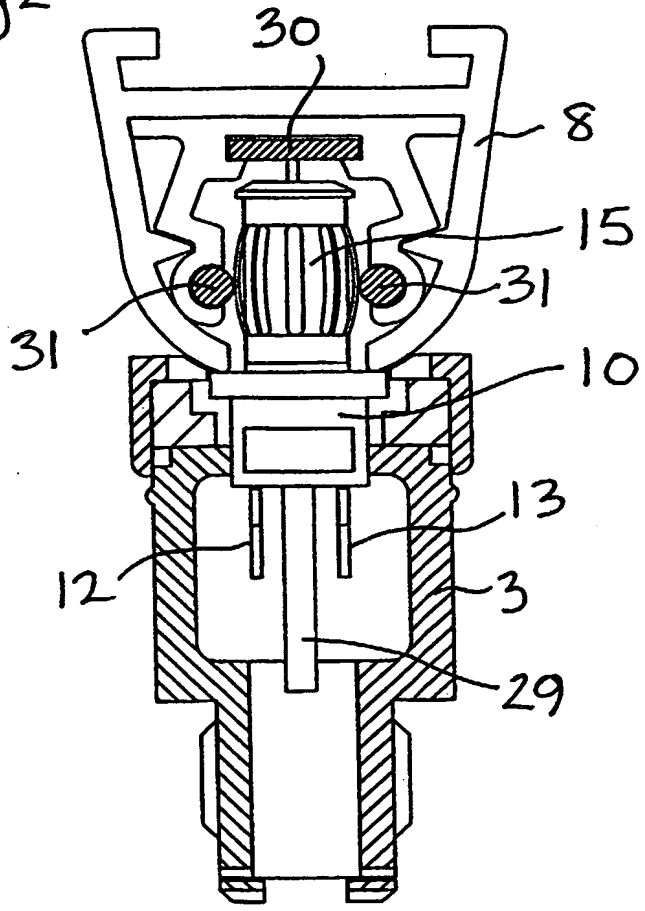


Fig 3

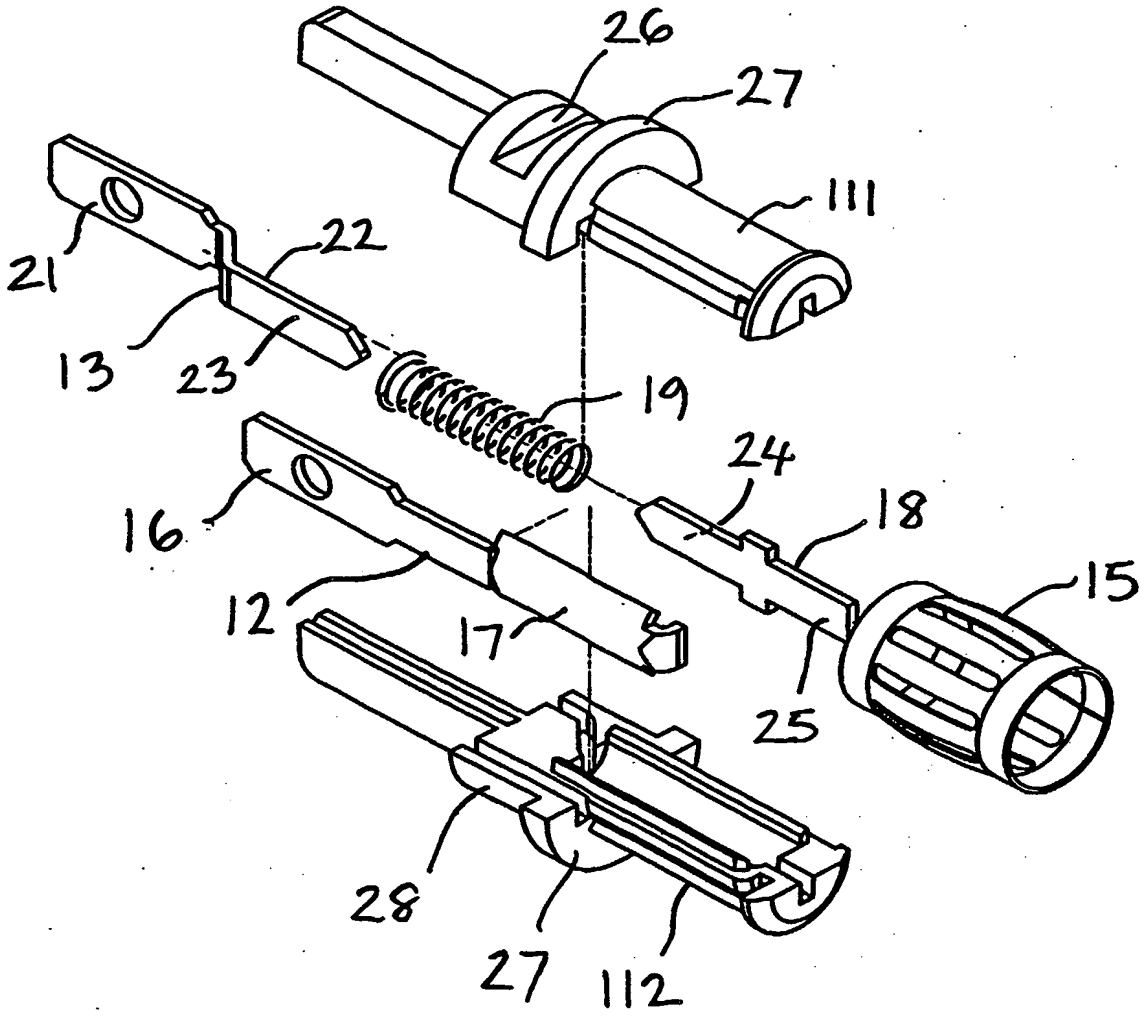


Fig6

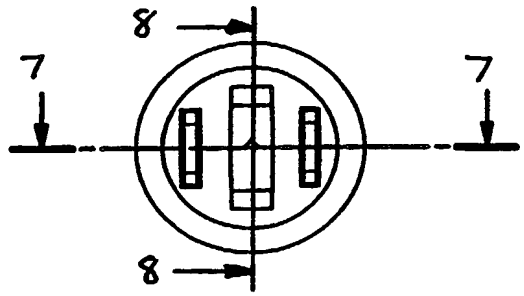


Fig4

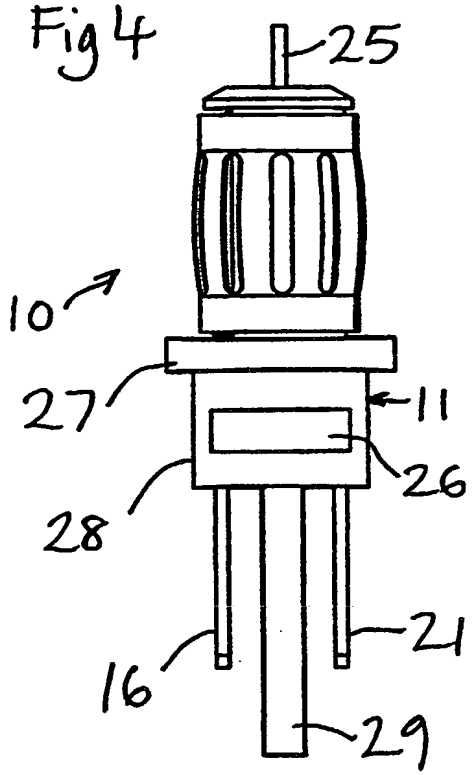


Fig5

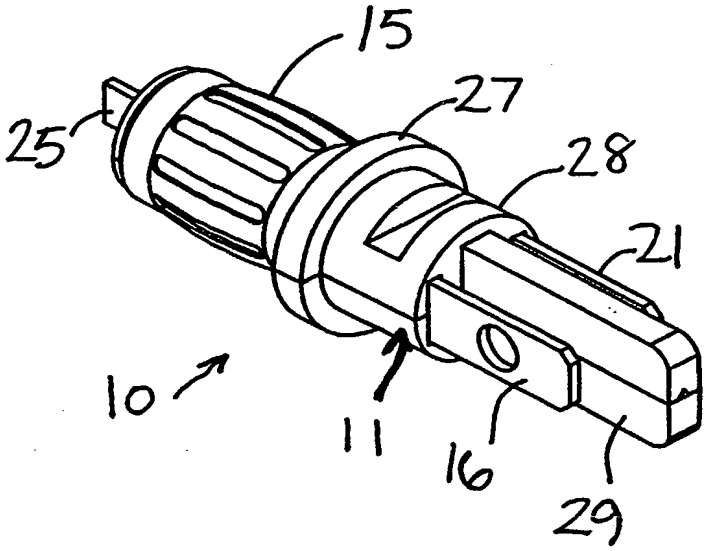


Fig 7

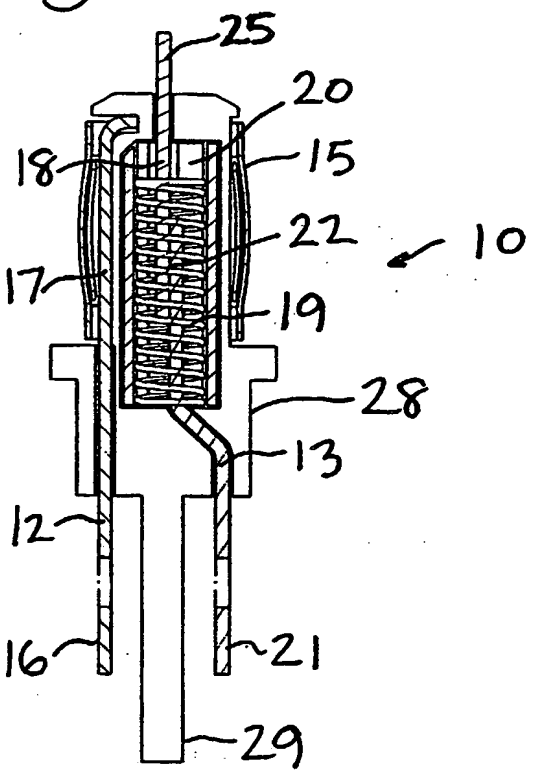
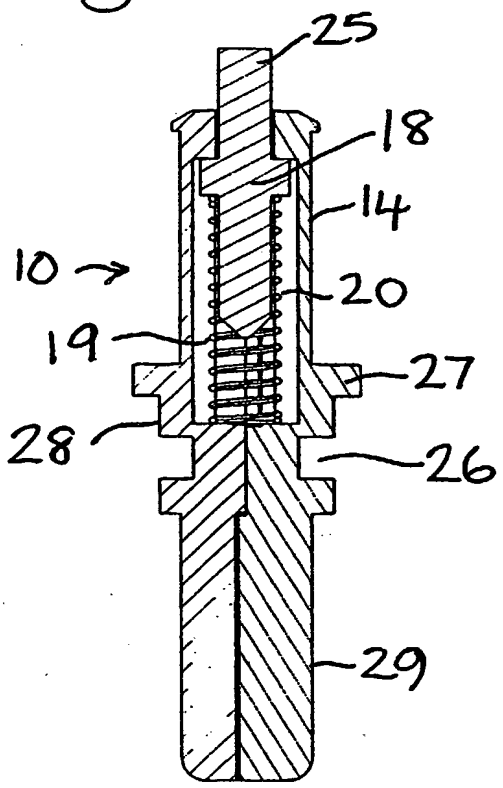


Fig 8



POWER TRACK ADAPTOR CONTACT ASSEMBLY

The invention relates to track mounted light fittings and, in particular, to a contact assembly for an adaptor for connecting a light fitting such as a spotlight to a power track mounted on a ceiling or other suitable surface. Such adaptors provide both a mechanical and an electrical connection.

In a known adaptor, the electrical connection is provided by a contact assembly comprising a pair of electrical contacts mounted to an insulating support. The first contact is in the form of a pin which contacts a central elongate conductor in the track whilst the second contact is cylindrical and surrounds the first contact to contact a pair of elongate conductors on opposite sides of the track. This arrangement permits continuous rotation of the adaptor without loss of electrical contact. In the known arrangement, the insulating support is rigidly held in the adaptor and the first contact is resiliently mounted in the insulating support to provide a spring-loaded contact with the central conductor to ensure a good contact and allow for manufacturing tolerances. The resilient mounting of the first contact within the support is such that the spade connector formed on the opposite end of the first contact moves with the first contact. This movement may cause the wire attached to the spade contact to become detached. Also, the contact must be mounted in the insulating support in a manner which permits movement and is therefore not firmly gripped.

According to the present invention, there is provided a contact assembly for an

adaptor for connecting a light fitting to a power track comprising: an insulating support carrying first and second electrical outlet contacts rigidly mounted to the support and extending therefrom for connection to the electrical conductor wires of a light fitting; a first electrical inlet contact in the form of a generally cylindrical contact sleeve mounted on the support and in electrical connection with the first electrical outlet contact; a second electrical inlet contact in the form of an elongate pin mounted coaxially within the sleeve and insulated therefrom, the pin being resiliently mounted on the support for limited axial movement; wherein the pin is electrically connected to the second electrical outlet contact through a sliding contact in which a contact surface formed on the pin slidingly engages a contact surface electrically connected to the second electrical outlet contact.

Embodiments of the invention are described below, with reference to the accompanying drawings, in which:

Figure 1 is a side view of an adaptor;

Figure 2 is an enlarged cross-sectional view of an adaptor connected to a power track;

Figure 3 is an exploded view of the components of a contact assembly;

Figure 4 is a side view of a contact assembly;

Figure 5 is an isometric view of a contact assembly;

Figure 6 is an end view of a contact assembly;

Figure 7 is a cross-sectional view of a contact assembly taken on the line 7-7 of Figure 6; and

Figure 8 is a cross-sectional view of a contact assembly taken on line 8-8 of

Figure 6 with the contact sleeve removed.

The adaptor 1, as shown in the figures, comprises a cylindrical stem 2 which is adapted to be pivotally connected to a lamp housing (not shown) of a spotlight or similar light fitting in known manner. The stem is formed in two separable parts 3 and 4. A clamp 5 is mounted on the stem part 3 and carries two pairs of clamping arms 6. The stem part 3 also carries a latch 7 which is mounted for limited sliding movement axially along the stem between a forward position and a retracted position. When the latch is in the retracted position, the arms 6 lie parallel to one another in a closed position in which they allow insertion and removal of the clamp into and out of the opening in a power track 8. When the latch is in the forward position, engagement elements 9 engage between the clamping arms 6 to urge them into an open position in which they prevent removal of the clamp from the opening.

The electrical connection between the adaptor and the track is provided by means of a contact assembly 10 rigidly mounted within the adaptor.

The contact assembly comprises an insulating support 11 which is formed of two injection moulded halves 111, 112 which are welded together after assembly. The support carries first and second electrical outlet contacts 12, 13 which are rigidly mounted to the support and extend therefrom for connection to the electrical conductor wires (not shown) of a light fitting mounted on the stem 2 of the adaptor.

The support 11 has a generally cylindrical portion 14 at one end and a first electrical inlet contact, in the form of a generally cylindrical contact sleeve15 provided by a balloon spring, is mounted on the support to surround the portion 14. The first electrical outlet contact 12 is formed of a single strip of metal having a first end portion 16 extending from the support and a second end portion 17 located within and contacting the sleeve contact 15.

A second electrical inlet contact is provided in the form of a spring-loaded elongate pin 18 which is mounted coaxially within the sleeve and insulated therefrom. The pin 18 is mounted for limited axial movement on the support by means of a helical spring 19 which is housed in a cylindrical cavity 20 formed in the cylindrical portion 14 of the support.

The second electrical outlet contact 13 is also formed from a single strip of metal having a first end portion 21 extending from the support and a second end portion 22 having a contact surface 23. The elongate pin 18 is electrically connected to the second electrical outlet contact 13 through a sliding contact in which a contact surface 24 on the pin slidingly engages the contact surface 23 of the outlet contact 13. This arrangement enables electrical contact to be maintained during axial movement of the pin.

The second end portion 22 of the outlet contact 13 and that part of the pin 18 which carries the contact surface 24 are located within the helical spring 19. This arrangement is particularly compact and the spring acts to hold the two components in engagement to maintain electrical contact.

The other end 25 of the pin extends from the support for spring-loaded contact with a central conductor 30 in the power track whilst the sleeve 15 contacts a pair of conductors 31 on opposite sides of the track.

The assembly is rigidly mounted in the adaptor by means of a groove 26 and a flange 27 formed on a central part 28 of the support 11. The support is also formed with an elongate beam 29 located between the free ends of the outlet contacts to act as a barrier preventing contact between the wire conductors.

CLAIMS

1. A contact assembly for an adaptor for connecting a light fitting to a power track comprising:

an insulating support carrying first and second electrical outlet contacts rigidly mounted to the support and extending therefrom for connection to the electrical conductor wires of a light fitting;

a first electrical inlet contact in the form of a generally cylindrical contact sleeve mounted on the support and in electrical connection with the first electrical outlet contact;

a second electrical inlet contact in the form of an elongate pin mounted coaxially within the sleeve and insulated therefrom, the pin being resiliently mounted on the support for limited axial movement;

wherein the pin is electrically connected to the second electrical outlet contact through a sliding contact in which a contact surface formed on the pin slidingly engages a contact surface electrically connected to the second electrical outlet contact.

2. A contact assembly according to Claim 1, wherein the second electrical outlet contact is formed from a single strip of metal having a first end portion extending from the support for connection to an electrical conductor wire of a light fitting and a second end portion located within the support and providing the contact surface for engaging the contact surface of the pin.

3. A contact assembly according to Claim 2, wherein the pin is resiliently mounted on the support by means of a helical spring and wherein the second end portion of the second

electrical outlet contact and that part of the pin carrying its contact surface are located within the helical spring.

4. A contact assembly according to Claim 3, wherein the support is formed with a cylindrical cavity, the spring is housed within the cavity, and the contact sleeve surrounds the cavity.

5. A contact assembly according to Claim 4, wherein the first electrical outlet contact is formed from single strip of metal having a first end portion extending from the support for connection to an electrical conductor wire of a light fitting and a second end portion located within and contacting the contact sleeve.

6. A contact assembly according to any preceding claim, wherein the support is formed of two injection moulded halves which are welded together after assembly of the contact assembly.

7. A contact assembly according to any preceding claim, rigidly mounted in an adaptor for releasable connection to a power track.

8. A contact assembly substantially as described herein, with reference to the accompanying drawings.

INVESTOR IN PEOPLE

Application No: GB 0025085.2 **Examiner:** Paul Nicholls
Claims searched: 1 - 8 **Date of search:** 11 December 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): H2E (ECJP)

Int Cl (Ed.7): F21V 21/35; H01R 25/14

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
A	GB 1,542,237 A	(PHILIPS) - See figures	1
A	WO 96/33532 A1	(STICHTING) - See figures	1
A	US 5,890,918 A	(HIERZER) - See figures 1 and 2	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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Europäisches Patentamt

EUROPÄISCHER TEILRECHERCHENBERICHT

nach Regel 46 Absatz 1 des Europäischen Patentübereinkommens

Nummer der Anmeldung: EP 04 00 6281

EINSCHLÄGIGE DOKUMENTE

Kategorie	Kennzeichnung des Dokuments mit Angabe, soweit erforderlich der maßgeblichen Teile	Betrifft Anspruch	KLASSIFIKATION DER ANMELDUNG (Int.Cl.7)
X Y	US 6 309 229 B1 (SINCLAIR JOHN ASHTON) 30. Oktober 2001 (2001-10-30) * das ganze Dokument *	1-3,6 7,11	H01R25/14 H01R25/14
Y	GB 2 368 198 A (* ILLUMA LIGHTING LTD) 24. April 2002 (2002-04-24) * das ganze Dokument *	7,11	

RECHERCHIERTE SACHGEBIETE (Int.Cl.7)

H01R
F21V

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Der vorliegende europäische Teilrecherchenbericht wurde für die Teile der Anmeldung erstellt, die sich auf die zuerst in den Patentansprüchen erwähnte Erfindung beziehen.

1

Recherchenort	Abschlußdatum der Recherche	Prüfer
Den Haag	2. August 2005	Salojärvi, K

KATEGORIE DER GENANNTEN DOKUMENTEN

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